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Fingerprint based exam hall authentication

Kirti Manikrao Samale[1], Gayatri Shivaji Chavan[2], Prof.KhadeP.M[3], Prof. Hule V.N[4], Prof. Patil P.R[5]
[1,2]*Student of Electronics and Telecommunication Department,*
[3]*Lecturer of Electronic and Telecommunication Department,*
[4]*Professor of Electronics and Telecommunication Department,*
[5]*HOD of Electronics and Telecommunication Department,*
Shri Shivaji Polytechnic Institute, Parbhani

***Abstract*- This paper present the development and implementation of the "Fingerprint Based Exam Hall Authentication". Authentication is the act of providing an assertion, such as the identity of a computer system user. In contact with identification, the act of indicating a person identity. Authentication is the process of verifying that identity. It might involve validating personal identity and also other identity [III].**

For the examinations we use the biometric authentication. It is a security process that relies on the unique biological characteristics of an individual to verify authorized or unauthorized person. Biometric authentication technology compares a biometric data capture to stored confirmed authentic data in a database.

I. INTRODUCTION

Recognition of person on the basis of biometric feature is an emerging phenomenon in our society. Traditional systems to verify a person's identity based on knowledge (secret code) or possession (ID card), however codes can be forgotten or overheard and ID cards can be lost or stolen giving impostors the possibility to pass the identity test. The use of features inseparable form of person's body significantly decrease the possibility of fraud. Furthermore biometric can offers user convenience in many situations, as it replaces cards, keys and codes. Fingerprint based authentication is one of the beneficial type of biometric technique and also it is considered one of the most practical features. Fingerprints are easily accessible, recognition requires minimal efforts on the part of the users, and it does not capture information other than strictly necessary [I]. In the examination authentication, always been a major challenge verification of the authentic candidate is not an easy task and also it consumes a lot of time and process. This reason to the design of fingerprint based exam hall authentication system that is designed to enter only users verified by their fingerprint scan and does not allow non verified users. In 19 century formal written examinations become regular in universities, schools and other educational institution. Examinations were also increasingly employed for the selection of recruit to all the services and the professions over the ages standard testing has been the most common methodology, yet the validity and credibility of the expanded range of contemporary assessment techniques have been called into question [IV]. An accurate automatic personal identification is becoming more and more important in now a days to the operation of our increasingly electronically interconnected

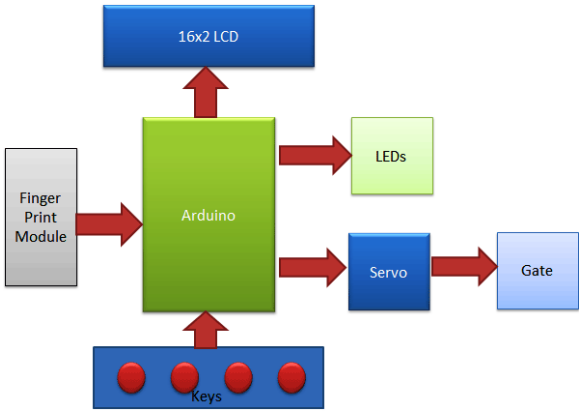

Fig: fingerprint based exam hall authentication

II. BLOCK DIAGRAM DESCRIPTION

Power supply: The system need regulated DC power supply to power the components and the power need to be regulated because, this components need stable power supply and at the certain limit.

Fingerprint module: Fingerprint scanner uses a lightsensitive microchip to produce a digital image.

The working principle of the fingerprint sensor mainly depends on the processing. Fingerprint processing mainly includes two elements namely enrolment and matching. In fingerprint enrolling, every users requires to place the finger twice. We can store the images in fingerprint module. Microcontroller: In project microcontroller is used to store the program and through micro controller we can send the signal to the LCD, Buzzer, motor.

LCD: It nothing but Liquid crystal display, we use 16*2 crystal display to show message for users.

Buzzer: It is used for indication purpose, when fingerprint is not matched with the stored fingerprint then buzzer sounds.

Servo Motor: Here in project motor is used to open and closing the door, when fingerprint is
matched with the registered fingerprint then motor is start and door gets open.

III.WORKING PRINCIPLE

The working principle of this project is divided into the two stages.

1. Registration mode: The first step in any biometric system is collection of the biometric being used. The device used to capture the initial sample will vary depending on the type of physical trait being collected. This could be a reader or sensor used to scan a fingerprint, before using the system for the first time for authentication the user must enroll their biometric sample, a number is assigned to him/her using the keypad. The number assigned is automatically stored in the fingerprint module.

2.Verification mode: In verification mode the system verifies the student by scanning the fingerprint and compares with the stored fingerprints. If the image is registered, it prints outs the individual identification no to confirm eligibility. When a wrong finger is placed on the module, it scans the image, sends to the fingerprint module. This browses through the image in its memory and if nothing is found, it prints out a message stating that the person in question is has no personal details in its memory. A massage "NOT REGISTERED" is displayed on the screen [I].

3.Template generation: Template generation process is done in the Fingerprint module r307. Fingerprint processing includes two parts: Fingerprint enrollment and fingerprint matching (the matching can be 1:1 or 1: N).

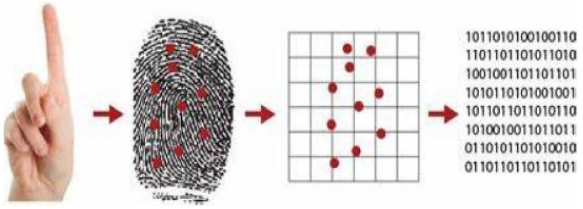

Fig: fingerprint sensor output

IV. CIRCUIT DIAGRAM

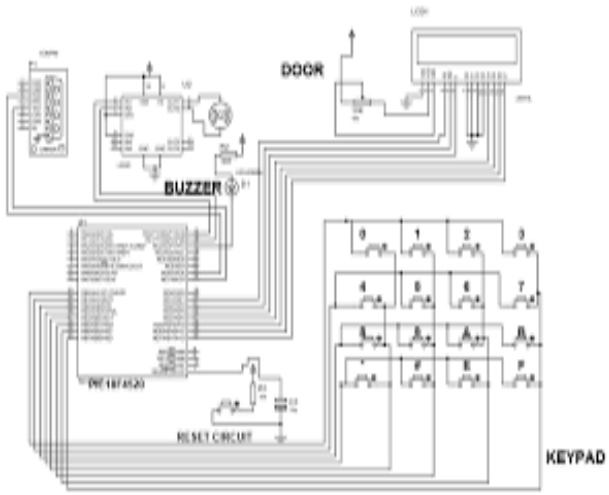

Fig: Circuit diagram of fingerprint based exam hall authentication

DESCRIPTION OF CIRCUIT DIAGRAM:

In the circuit diagram microcontroller (PIC18f4520) has connected with the LCD, buzzer, motor. From the basis of block diagram we connect the serial communication port for interface the fingerprint module. Input is given to the microcontroller by using serial communication transmitter of the serial communication is connect with the receiver of the microcontroller i.e. pin no.26 and receiver of the serial communication is connected with the transmitter of the microcontroller i.e. pin no.25. Buzzer is connected to the pin no.27. LCD is connected to the PORT D by using LCD we can display the message. Keypad is used to select the option add and delete. We can connect the motor driver to the motor and PORT C of the microcontroller.

V. RESULT

The fingerprint of the person was stored in the fingerprint module at the time of creation of the database. Person put the finger on the fingerprint module, firstly sensor enroll the finger in the database of the module and stored result in module. Sensor matches result with the stored fingerprint. When it matches the result then microcontroller will give the instruction to the turn on the motor and gate will open which is expected result.

VI. CONCLUSION

The fingerprint system was developed in two practical modes; the registration mode and verification mode. The registration mode was designed to scan the fingerprint and ID number which were properly and correctly saved into the database of the system. The authentication mode was designed to confirm the eligibility of candidate for examination. The system designed works basically on three criteria. These are the image acquisition stage which involves capturing the image (fingerprint) via the R307 fingerprint module. The feature stage is the second stage which involves extracting the important minutiae for the purpose of the matching stage which is the authentication state. The matching stage then tends to compare the template image based on 25% threshold value set for the operation of the system [II].

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